

Groundwater Application Review Summary Form

Application # G- 18886

GW Reviewer Joe Kemper Date Review Completed: 2/26/2020

Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. ✓ Route through Well Construction and Compliance Section.

SI 2/27/20

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 2/26/2020
 FROM: Groundwater Section Joe Kemper
 Reviewer's Name
 SUBJECT: Application G- 18886 Supersedes review of na
 Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation.**

A. GENERAL INFORMATION: Applicant's Name: Palmer Family Trust County: Josephine

A1. Applicant(s) seek(s) 0.178 cfs from 1 well(s) in the Rogue Basin,
Illinois River subbasin

A2. Proposed use Irrigation (16 ac) & Nursery (2 ac) Seasonality: 4/1 to 10/31 (Irrigation) & 1/1 to 12/31 (Nursery)

A3. Well and aquifer data (**attach and number logs for existing wells; mark proposed wells as such under logid**):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	JOSE 60693	1	Alluvium	0.178	39S/7W-30 SW-NE	200' N, 130' E fr C1/4 S 30
2						
3						
4						
5						

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	1489	118	16	8/2/2019	140	0-18	0-118	Na	Na	80		air

Use data from application for proposed wells.

A4. **Comments:** _____

A5. **Provisions of the Rogue (OAR 690-515)** Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water **are**, or **are not**, activated by this application. (Not all basin rules contain such provisions.)
 Comments: The Rogue Basin rules contain no such provisions.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. is over appropriated, is not over appropriated, or cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. will not or will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. will not or will likely to be available within the capacity of the groundwater resource; or
- d. will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. The permit should contain condition #(s) 7C (7-yr SWL); 7J; Medium water-use reporting;
 - ii. The permit should be conditioned as indicated in item 2 below.
 - iii. The permit should contain special condition(s) as indicated in item 3 below;

- B2. a. **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;
- b. **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
- c. **Condition** to allow groundwater production only from the _____ groundwater reservoir between approximately _____ ft. and _____ ft. below land surface;
- d. **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** Historical water levels in wells that are located within two miles of the applicant’s well and also access alluvium of the Illinois River valley indicate that water levels are relatively shallow (5-25 feet BLS) and fluctuate 5-10 feet annually. Long term and seasonal trends do not indicate that groundwater is over appropriated.

There are several permitted wells within 1 mile of the applicant’s well, and tax lot density indicates a moderate amount of domestic well development in the area. The proposed use poses the risk of interference and/or injury. Based on a review of well logs and adjacent tax lots, JOSE 45574 is likely the closest domestic well, located 1600-1800 feet to the southeast. The Theis equation (1941) is used to estimate well-to-well interference at this well (see below) using a pumping regime that would maximize drawdown and a range of aquifer parameters obtained from pumping tests conducted in the Illinois Valley. Results indicate that drawdown will likely be less than ten feet after using the requested volume of water i.e., not injury. However considering the proximity of senior groundwater users, decline conditions, and medium water-use reporting conditions should be applied.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Alluvium of Illinois River Valley	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: The target aquifer consists of unconsolidated clays, sands, and gravels deposited by the Illinois River system. Driller’s logs for adjacent wells typically indicate a final SWL of 10-20 feet BLS, which is often higher than “first water” or noted water bearing zones. However, lithology logs do not identify discrete lithology changes that represent a laterally extensive aquifer with an overlying confining unit. Observed SWLs largely mimic surface topography as a water table aquifer, independent of well depth. Thus, the sediment package likely operates as a single aquifer system bounded by the water table.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Sucker Creek	1473	1465	4990	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Tycer Creek	1473	1470	3350	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Kelly Creek	1473	1380	9000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Sucker Creek, Tycer Creek, and Kelly Creek flow through the unconsolidated sediments that host the target aquifer. Generally speaking, SWL measurements in nearby wells are shallow and typically coincident with adjacent streams. This indicates that water can flow between surface water and the target aquifer. Kelly Creek does not appear to be hydraulically connected with the target aquifer until further downstream where it has incised markedly into the unconsolidated sediments.

Water Availability Basin the well(s) are located within: SUCKER CR > E FK ILLINOIS R - AT MOUTH; impacts also considered to streams located within E FK ILLINOIS R > ILLINOIS R - AT MOUTH

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% natural flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	IS69808A	54	<input type="checkbox"/>	25.9	<input type="checkbox"/>	<25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	na	na	<input type="checkbox"/>	41.5	<input type="checkbox"/>	<25%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
	NA	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Streamflow depletion is estimated using analytical stream depletion model (Hunt, 1999) using bulk aquifer parameters representative of the local geology.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3	%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS		0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q		342	535	556	498	317	139	66.3	46.1	41.5	47.7	102	290
(C) = 1 % Nat. Q		3.42	5.35	5.56	4.98	3.17	1.39	0.663	0.461	0.415	0.477	1.02	2.9
(D) = (A) > (C)													
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: Streamflow depletion is not estimated here because the maximum proposed rate is less than 1% of the calculated natural flows for the WAB pertinent to Kelly Creek (E FK ILLINOIS R > ILLINOIS R - AT MOUTH).

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

C5. **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
 i. The permit should contain condition #(s) _____;
 ii. The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** The applicant's well accesses an aquifer that has been determined to be hydraulically connected to Sucker Creek, Tyser Creek, and Kelly Creek. However, there is not a preponderance of evidence that the proposed use/rate has the Potential for Substantial Interference (PSI) as per OAR 690-009.

References Used: Hunt, B. 1999. Unsteady Stream Depletion from Ground Water Pumping. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

OWRD Groundwater Site Information System Database – Accessed 2/25/2020.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Assoc., pp. 268-269 & 298-303.

Wells, F.G., Hotz, P.E., and Cater, F.W., Jr., 1949, Preliminary description of the geology of the Kerby quadrangle: Oregon Department of Geology and Mineral Industries, Bulletin 40, scale 1:96,000

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

D4. Route to the Well Construction and Compliance Section for a review of existing well construction.

Water Availability Tables

Water Availability Analysis

Detailed Reports

SUCKER CR > E FK ILLINOIS R - AT MOUTH
ROGUE BASIN

Water Availability as of 2/12/2020

Watershed ID #: 69808 ([Map](#))

Exceedance Level: 80% ▾

Date: 2/12/2020

Time: 10:05 AM

Water Availability Calculation	Consumptive Uses and Storages	Instream Flow Requirements	Reservations
Water Rights	Watershed Characteristics		

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	132.00	0.16	132.00	0.00	135.00	-3.16
FEB	221.00	0.16	221.00	0.00	135.00	85.80
MAR	220.00	0.16	220.00	0.00	135.00	84.80
APR	215.00	2.55	212.00	0.00	135.00	77.40
MAY	162.00	4.01	158.00	0.00	135.00	23.00
JUN	79.70	5.60	74.10	0.00	80.00	-5.90
JUL	42.60	7.46	35.10	0.00	54.00	-18.90
AUG	30.40	6.17	24.20	0.00	54.00	-29.80
SEP	25.90	4.07	21.80	0.00	80.00	-58.20
OCT	26.10	1.39	24.70	0.00	80.00	-55.30
NOV	36.80	0.16	36.60	0.00	135.00	-98.40
DEC	77.30	0.16	77.10	0.00	135.00	-57.90
ANN	134,000.00	1,950.00	132,000.00	0.00	77,900.00	64,400.00

Water Availability Analysis

Detailed Reports

E FK ILLINOIS R > ILLINOIS R - AT MOUTH
ROGUE BASIN

Water Availability as of 2/12/2020

Watershed ID #: 70980 ([Map](#))
Date: 2/12/2020

Exceedance Level: 80% ▾
Time: 10:05 AM

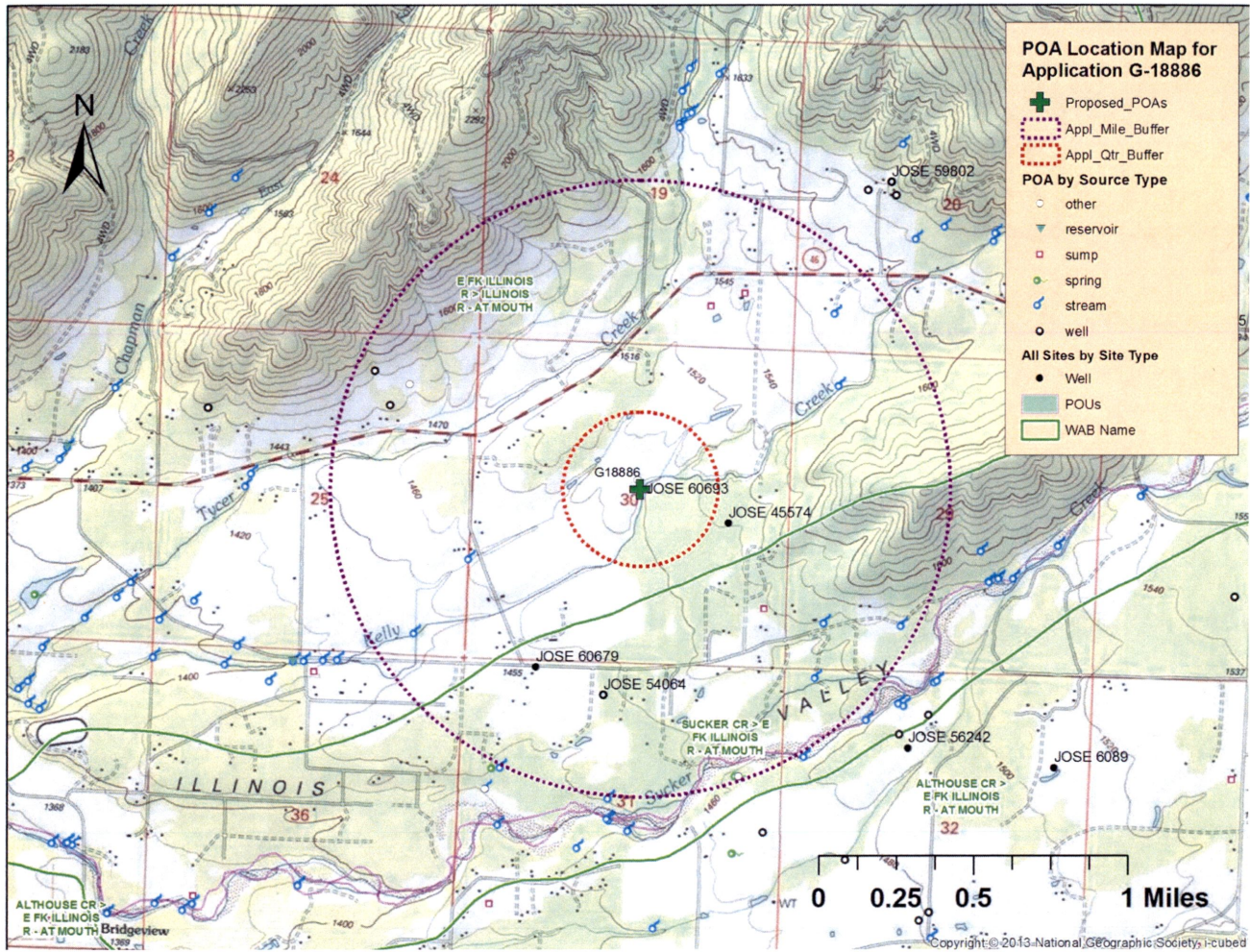
Water Availability Calculation	Consumptive Uses and Storages	Instream Flow Requirements	Reservations
	Water Rights		Watershed Characteristics

Water Availability Calculation

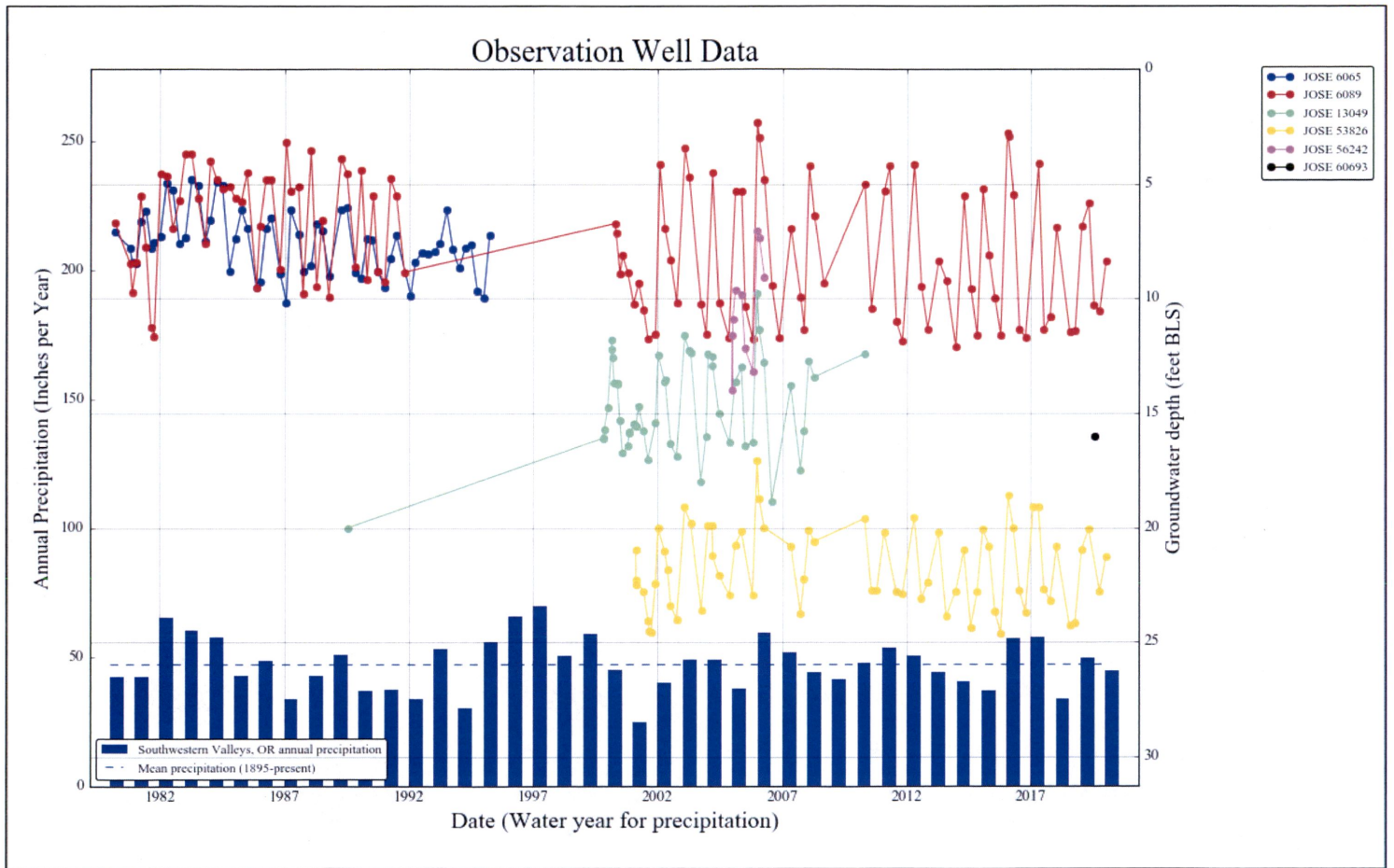
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	342.00	4.21	338.00	0.00	135.00	203.00
FEB	535.00	4.36	531.00	0.00	135.00	396.00
MAR	556.00	4.39	552.00	0.00	135.00	417.00
APR	498.00	8.96	489.00	0.00	135.00	354.00
MAY	317.00	11.80	305.00	0.00	135.00	170.00
JUN	139.00	15.10	124.00	0.00	80.00	43.90
JUL	66.30	18.90	47.40	0.00	60.00	-12.60
AUG	46.10	16.20	29.90	0.00	54.00	-24.10
SEP	41.50	11.90	29.60	0.00	70.00	-40.40
OCT	47.70	6.32	41.40	0.00	100.00	-58.60
NOV	102.00	3.83	98.20	0.00	135.00	-36.80
DEC	290.00	4.07	286.00	0.00	135.00	151.00
ANN	330,000.00	6,660.00	323,000.00	0.00	78,900.00	249,000.00

Well Location Map



Water-Level Trends in Nearby Wells

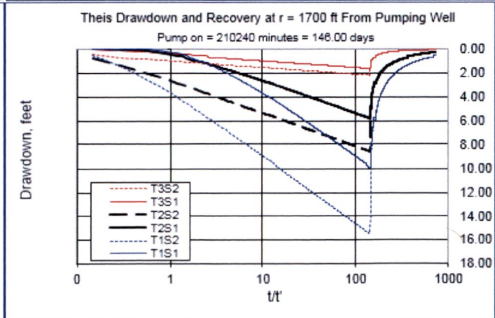
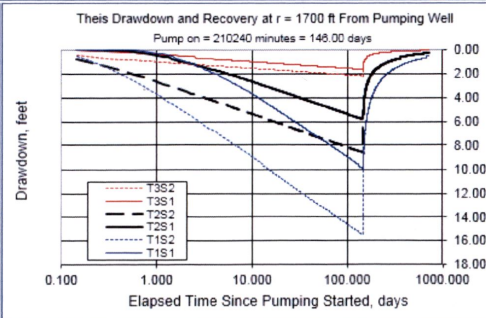
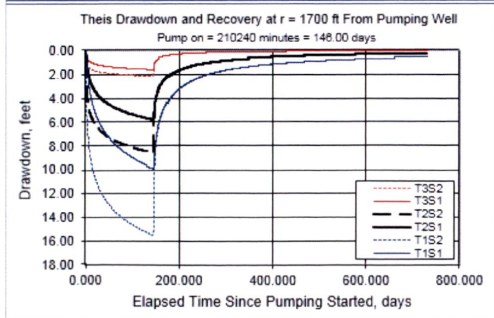
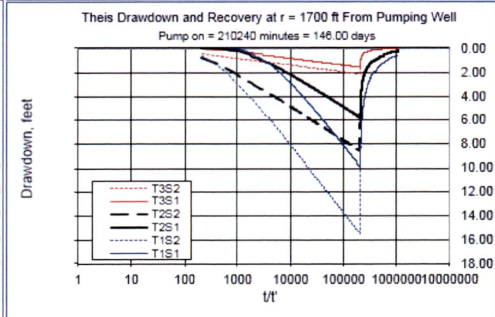
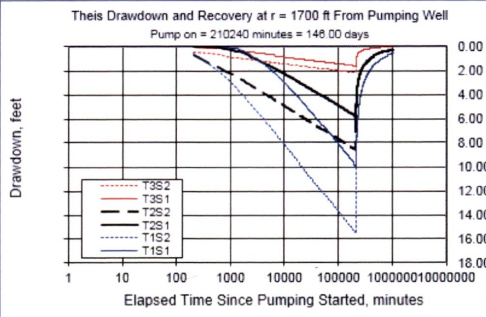
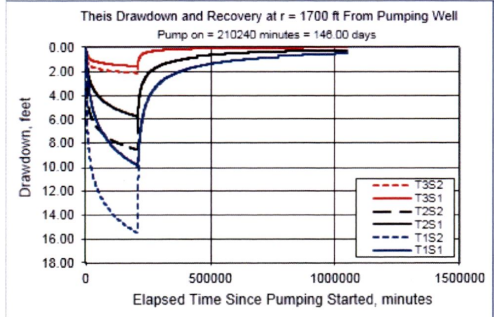
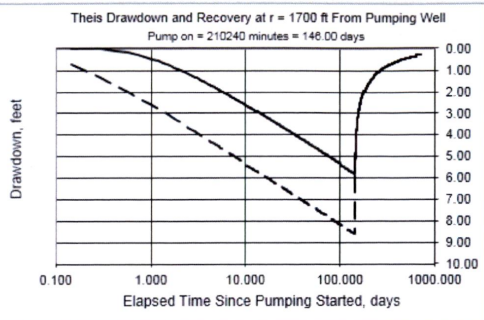


Theis Drawdown Estimates

Theis Time-Drawdown Worksheet v.3.00
 Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
 Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		146		d	
Radial distance from pumped well:	r		1700		ft	Q conversions
Pumping rate	Q		0.178		cfs	79.89 gpm
Hydraulic conductivity	K	5	10	50	ft/day	0.18 cfs
Aquifer thickness	b		100		ft	10.68 cfm
Storativity	S_1		0.001			15,379.20 cfd
	S_2		0.0001			0.35 af/d
Transmissivity Conversions	T_ft2pd	500		1000	ft2/day	
	T_ft2pm	0.3472222	0.6944444	3.4722222	ft2/min	
	T_gpdpt	3740	7480	37400	gpd/ft	

Use the Recalculate button if recalculation is set to manual



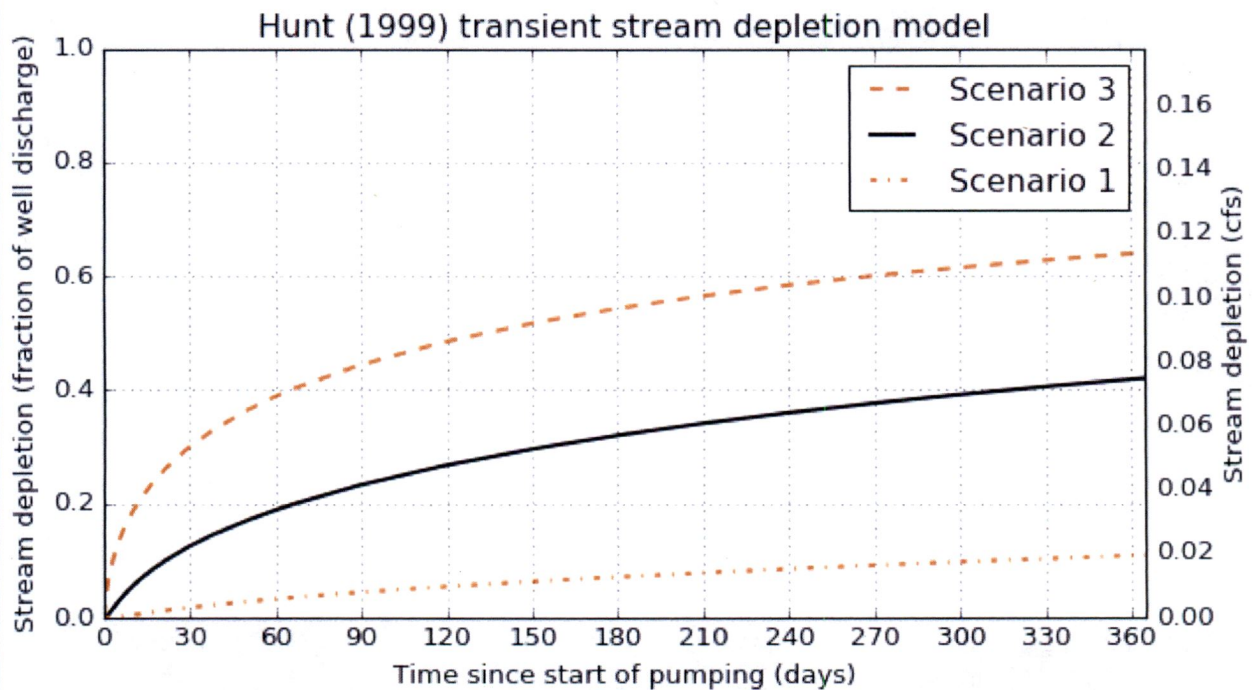
Stream Depletion Model Results

Application type:	G
Application number:	18886
Well number:	1
Stream Number:	2
Pumping rate (cfs):	0.178
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3350	3350	3350	ft
Aquifer transmissivity	T	500	1000	5000	ft ² /day
Aquifer storativity	S	0.001	0.0005	0.0001	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	30	20	10	ft
Not used		0	0	0	
Stream width	ws	30	20	10	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	6	13	19	23	27	30	32	34	36	38	39	41	42
Depletion (cfs)	0.01	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.07



MEMO

A handwritten signature in blue ink, appearing to be "of [unclear] [unclear]".

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18886
Date: March 3, 2020

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Joe Kemper reviewed the application. Please see Joe's Groundwater Review and the Well Log.

Applicant's Well #1 (JOSE 60693): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Well #1 may not satisfy hydraulic connection issues.

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

JOSE 60693

8/30/2019

WELL I.D. LABEL# L 134498
START CARD # 1044055
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D.
First Name GENE Last Name MIRANDA
Company PALMER FAMILY TRUST
Address PO BOX 1130
City CAVE JUNCTION State OR Zip 97523

(2) TYPE OF WORK

[X] New Well [] Deepening [] Conversion
[] Alteration (complete 2a & 10) [] Abandonment (complete 5a)

(2a) PRE-ALTERATION

Casing: Dia + From To Gauge Stl Plstc Wld Thrd
Material From To Amt sacks/lbs
Seal:

(3) DRILL METHOD

[X] Rotary Air [] Rotary Mud [] Cable [] Auger [] Cable Mud
[] Reverse Rotary [] Other

(4) PROPOSED USE

[X] Domestic [] Irrigation [] Community
[] Industrial/ Commercial [] Livestock [] Dewatering
[] Thermal [] Injection [] Other

(5) BORE HOLE CONSTRUCTION

Special Standard [] (Attach copy)
Depth of Completed Well 140.00 ft.

Table with columns: Dia, From, To, Material, SEAL, Amt, lbs. Rows include Bentonite Chips and Calculated values.

How was seal placed: Method [] A [] B [] C [] D [] E

[X] Other DRY POURED

Backfill placed from ft. to ft. Material

Filter pack from ft. to ft. Material Size

Explosives used: [] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Table with columns: Casing, Liner, Dia, From, To, Gauge, Stl, Plstc, Wld, Thrd. Includes material and seal details.

Shoe [] Inside [X] Outside [] Other Location of shoe(s) 118

Temp casing [] Yes Dia From + To

(7) PERFORATIONS/SCREENS

Perforations Method

Screens Type Material

Table with columns: Perf/Screen, Casing/Liner, Dia, From, To, Scrn/slot width, Slot length, # of slots, Tele/pipe size.

(8) WELL TESTS: Minimum testing time is 1 hour

[] Pump [] Bailer [X] Air [] Flowing Artesian

Table with columns: Yield gal/min, Drawdown, Drill stem/Pump depth, Duration (hr). Values: 80, 118, 1.5.

Temperature 56 °F Lab analysis [] Yes By

Water quality concerns? [] Yes (describe below) TDS amount 100 ppm

Table with columns: From, To, Description, Amount, Units.

(9) LOCATION OF WELL (legal description)

County JOSEPHINE Twp 39.00 S N/S Range 7.00 W E/W WM
Sec 30 SW 1/4 of the NE 1/4 Tax Lot 200
Tax Map Number Lot
Lat " or 42.14819800 DMS or DD
Long " or -123.57147800 DMS or DD
[] Street address of well [] Nearest address

4203 CAVES HWY CAVE JUNCTION OR 97523

(10) STATIC WATER LEVEL

Table with columns: Date, SWL(psi), + SWL(ft). Rows for Existing Well / Pre-Alteration and Completed Well (8/2/2019, 16).

Flowing Artesian? [] Dry Hole? []

WATER BEARING ZONES

Depth water was first found 118.00

Table with columns: SWL Date, From, To, Est Flow, SWL(psi), + SWL(ft). Row for 8/2/2019, 118, 140, 80, 16.

(11) WELL LOG

Ground Elevation

Table with columns: Material, From, To. Lists soil layers like TIGHT BROWN CLAY, BROWN CLAY, etc.

Date Started 7/31/2019 Completed 8/2/2019

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards.

License Number 1945 Date 8/8/2019

Signed JUSTIN SPLIETHOF (E-filed)

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above.

License Number 1835 Date 8/13/2019

Signed KEVIN GILL (E-filed)

Contact Info (optional) CLOUSER DRILLING INC.